

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-81. (Cancelled)

82. (Previously presented) A method for forming a paper web that contains a first layer formed primarily from hardwood fibers, said method comprising:

treating said hardwood fibers with a first hydrolytic enzyme to hydrolyze said hardwood fibers and form aldehyde groups predominantly on the surface thereof, wherein the dosage of said first hydrolytic enzyme is from about 0.1 to about 10 s.e.u. per gram of oven-dried pulp, wherein said first hydrolytic enzyme comprises a cellulose-binding domain free endo-glucanase; and

further treating said hardwood fibers with a cross-linking agent that forms a bond with said aldehyde groups on the surface of said hardwood fibers.

83. (Previously presented) A method as defined in claim 82, wherein the dosage of said first hydrolytic enzyme is from about 0.1 to about 5 s.e.u. per gram of oven-dried pulp.

84. (Previously presented) A method as defined in claim 82, wherein the dosage of said first hydrolytic enzyme is from about 0.1 to about 2 s.e.u. per gram of oven-dried pulp.

85. (Previously presented) A method as defined in claim 82, wherein said first layer defines an outer surface of the paper web.

86. (Previously presented) A method as defined in claim 82, wherein said first layer also contains softwood fibers.

87. (Previously presented) A method as defined in claim 82, wherein said cross-linking agent is a starch.

88. (Previously presented) A method as defined in claim 87, wherein said starch forms a glycosidic bond with said aldehyde groups.

89. (Previously presented) A method as defined in claim 87, wherein said starch is a natural starch.

90. (Previously presented) A method as defined in claim 82, wherein said paper web includes a second layer formed primarily of pulp fibers selected from the group consisting of softwood fibers, hardwood fibers, and combinations thereof.

91. (Previously presented) A method as defined in claim 90, wherein said pulp fibers of said second layer are treated with a second hydrolytic enzyme capable of hydrolyzing said pulp fibers to form aldehyde groups predominantly on the surface of said pulp fibers.

92. (Previously presented) A method as defined in claim 91, wherein said second layer contains softwood fibers.

93. (Previously presented) A method as defined in claim 91, wherein said second layer contains hardwood fibers.

94. (Previously presented) A method as defined in claim 91, wherein said second hydrolytic enzyme comprises a cellulose-binding domain free endo-glucanase.

95. (Previously presented) A method as defined in claim 82, wherein a debonder is incorporated into said first layer.

96. (Previously presented) A method as defined in claim 82, wherein a strength agent is incorporated into said first layer.

97. (Previously presented) A method as defined in claim 82, wherein said first hydrolytic enzyme is a single-component enzyme.

98. (Previously presented) A method as defined in claim 82, wherein said first hydrolytic enzyme is a multi-component enzyme.

99. (Previously presented) A method for forming a paper web that contains a first layer and a second layer, said method comprising:

providing a first fibrous furnish containing hardwood fibers;

providing a second fibrous furnish containing pulp fibers selected from the group consisting of hardwood fibers, softwood fibers, and combinations thereof;

treating said first fibrous furnish with a cellulosic-binding domain free endo-glucanase to hydrolyze said hardwood fibers and form aldehyde groups predominantly on the surface thereof, wherein the dosage of said cellulosic-binding domain free endo-glucanase is from about 0.1 to about 10 s.e.u. per gram of oven-dried pulp;

further treating said first fibrous furnish with a cross-linking agent that forms a bond with said aldehyde groups on the surface of said hardwood fibers; and

forming the paper web from said first fibrous furnish and said second fibrous furnish, said first fibrous furnish forming said first layer and said second fibrous furnish forming said second layer.

100. (Previously presented) A method as defined in claim 99, wherein the dosage of said cellulosic-binding domain free endo-glucanase is from about 0.1 to about 5 s.e.u. per gram of oven-dried pulp.

101. (Previously presented) A method as defined in claim 99, wherein the dosage of said cellulosic-binding domain free endo-glucanase is from about 0.1 to about 2 s.e.u. per gram of oven-dried pulp.

102. (Previously presented) A method as defined in claim 99, wherein said first fibrous furnish also contains softwood fibers.

103. (Previously presented) A method as defined in claim 99, wherein said cross-linking agent is a starch.

104. (Previously presented) A method as defined in claim 103, wherein said starch forms a glycosidic bond with said aldehyde groups.

105. (Previously presented) A method as defined in claim 103, wherein said starch is a natural starch.

106. (Previously presented) A method as defined in claim 99, wherein said cross-linking agent is applied in an amount from about 1 to about 15 pounds per metric ton of the weight of the first fibrous furnish.

107. (Previously presented) A method as defined in claim 99, wherein said cross-linking agent is applied in an amount from about 1 to about 10 pounds per metric ton of the weight of the first fibrous furnish.

108. (Previously presented) A method as defined in claim 99, wherein a debonder is applied to said first fibrous furnish.

109. (Previously presented) A method as defined in claim 99, wherein a strength agent is applied to said first fibrous furnish.

110. (Previously presented) A method as defined in claim 99, wherein said second fibrous furnish is treated with a cellulosic-binding domain free endo-glucanase capable of hydrolyzing said pulp fibers to form aldehyde groups predominantly on the surface of said pulp fibers.

111. (Previously presented) A method as defined in claim 110, wherein said second fibrous furnish contains softwood fibers.

112. (Previously presented) A method as defined in claim 110, wherein said second fibrous furnish contains hardwood fibers.

113. (Previously presented) A method for forming a paper web that contains a first layer formed primarily from hardwood fibers, said first layer defining an outer surface of the paper web, said method comprising:

treating said hardwood fibers with a cellulosic-binding domain free endo-glucanase to hydrolyze said hardwood fibers and form aldehyde groups predominantly on the surface thereof, wherein the dosage of said cellulosic-binding domain free endo-glucanase is from about 0.1 to about 5 s.e.u. per gram of oven-dried pulp; and

further treating said hardwood fibers with a starch cross-linking agent that forms a glycosidic bond with said aldehyde groups on the surface of said hardwood fibers.

114. (Previously presented) A method as defined in claim 113, wherein the dosage of said cellulosic-binding domain free endo-glucanase is from about 0.1 to about 2 s.e.u. per gram of oven-dried pulp.

115. (Previously presented) A method as defined in claim 113, wherein said first layer also contains softwood fibers.

116. (Previously presented) A method as defined in claim 113, wherein said starch is a natural starch.

117. (Previously presented) A method as defined in claim 113, wherein said paper web includes a second layer formed primarily of pulp fibers selected from the group consisting of softwood fibers, hardwood fibers, and combinations thereof.

118. (Previously presented) A method as defined in claim 117, wherein said pulp fibers of said second layer are treated with a cellulosic-binding domain free endo-

glucanase capable of hydrolyzing said pulp fibers to form aldehyde groups predominantly on the surface of said pulp fibers.

119. (Previously presented) A method as defined in claim 118, wherein said second layer contains softwood fibers.

120. (Previously presented) A method as defined in claim 118, wherein said second layer contains hardwood fibers.

121. (Previously presented) A method as defined in claim 118, wherein a debonder is incorporated into said first layer.

122. (Previously presented) A method as defined in claim 118, wherein a strength agent is incorporated into said first layer.